Open RDA Update – May 3, 2006

1. **WSR-88D Open RDA (ORDA).** The ORDA deployment is proceeding on schedule. As of now, the ORDA has been installed at 81 single channel sites and three redundant channel sites (for the Beta Test). The Deployment Readiness Review for the redundant configuration of the ORDA Project was held on 18 April 2006. The government approved proceeding with full deployment of the redundant ORDA systems. ORDA system information, FAQs, and the Deployment Schedule are available at: http://www.orda.roc.noaa.gov/.

   While the deployment is proceeding as planned, there are a few issues that have been observed.

   Pre ORDA INCO:

   Ordering legacy RDA parts that will become obsolete with the ORDA INCO. Before ordering any legacy RDA parts, contact the ROC Hotline as they have several spare parts on site that can be shipped at no cost. The Hotline will also assist with troubleshooting to ensure that all the necessary parts are shipped.

   Post ORDA INCO:

   a. Linearity Alarms. There is a software incompatibility issue between ORDA Build 7 and the firmware on many of the ORDA IFDs. This is the primary cause for the occurrence of these alarms. This problem has been fixed with ORDA Build 8 (All INCO sites starting May 1 will be installed with ORDA Build 8). Faulty 4/104W154 or 4/104W100 cables may also contribute to the problem (All INCO sites starting April 24 will have these cables replaced during installation. When sufficient cable stock is received, the ROC will retrofit the sites where the ORDA is already installed via a modification note.) Before ordering any replacement parts because of these alarms, we highly recommend sites contact the Hotline to identify the probable cause.

   b. UPS Site Wiring Fault Alarms. This alarm is generated by the RDA UPS when the UPS detects (1) a hot/neutral swap, (2) no ground connection or (3) too much current on the ground line. If a facility has this alarm, they should contact the Hotline for assistance.

   c. RF Test Attenuator adaptation data Issues

      When performing the RF Attenuator Test (EHB 6-515 6.6.3.3) and CW noise exceeds 5 dB for Build 7.0 or 12 dB for Build 8.0, use the following to troubleshoot before ordering any replacement components:

      Verify the RF connections between the RF Generator (UD4A1) and the IFD (UD4A38) including:
      -UD4A1J4, 4AT2, 4AT3, 4W351, 4A38J3
      -UD4A1J2, 4DC3J1, 4DC3J3, 4W165, 4A5J2, 4A5J3, 4W354, 4AT4
      -4DC3J2, 4W352, 4A39LO,4A39IF, 4W356, 4AR1, 4W350

      In some cases, it may be necessary to remove and re-install a given component to ensure proper connection. Once this verification process is complete, re-run the RF Attenuator Test. (EHB 6-515 6.6.3.3)

      If you continue to experience CW noise errors, perform the RF Generator (UD4A1) Checkout Procedure (EHB 6-515 6.5.18) to verify that the RF Generator is operating within specifications.

If the RF Generator is identified as not operating within specification, please contact the Hotline (800-643-3363) for additional RF Generator Test Procedures.

If you are able to resolve the CW noise error please contact the Hotline with details concerning the problem(s) and the action(s) required to correct the problem. The ROC will use the information to assist in developing new troubleshooting/test procedures.

d. Sub-optimal clutter suppression or poor AP removal when clutter filtering ALL BINS is selected. There are two primary contributors to these conditions:

    1. An ORDA Build 7 software bug, (see Linearity Alarms paragraph). For all ORDA INCOs accomplished prior to 1 May 2006, the ROC will ship ORDA Build 8 CDs as part of the WSR-88D Build 8 software deployment. This will be accomplished over a five week period. The deployment schedule is at: http://www.roc.noaa.gov/ssb/cm/csw_notes/compsw.asp then click on "SW 32."
    2. Improper transmitter alignment – please contact the ROC Hotline.

e. Clutter problems. Some sites are seeing a reduction of reflectivity, velocity, and spectrum width values in the zero-isodop region. This is enhanced during low wind speed conditions and when the ALL BINS clutter filter setting is used. The ROC recommends that the clutter bypass map setting be used during precipitation events to mitigate the data reduction problem and that the all bins setting be used only during clear air conditions to mitigate AP.

f. Clutter Bypass Maps. The ROC recommends that new ORDA sites generate new clutter bypass maps under ideal meteorological conditions as soon as possible. Bypass maps generated during ORDA instillation may not be appropriate. Instructions for generating new clutter bypass maps under ideal meteorological conditions are given at the following web site: http://www.wdtb.noaa.gov/buildTraining/ORDA/PDFs/Bypass.pdf

Miscellaneous:

a. Trigger Amplifier use has increased over the past year. This includes pre-ORDA INCO and post-ORDA INCO timeframes. The ROC has been working on a solid state trigger amplifier modification that should increase its reliability. The ROC expects to have the parts for the modification at the NRC in May so the NRC can start repairing trigger amplifiers with the new parts. It should be noted that prior to an ORDA INCO, the NEXRAD facility is requested to demonstrate their ability to transmit in short and long pulse. The long pulse mode is not used very often. When it is used, this mode increases high voltage stress on the overall transmitter, particularly in the transmitter modulator. The overall impact of tuning the transmitter, operating in long pulse, etc... will put stress on marginal NEXRAD components and could cause failures. The NEXRAD system was designed to perform these tasks and component aging could be a contributing factor. Reports from the NRC do not reveal any increase in their "no defect found" rates on the increased number of failed, thus returned stock items. This should lead one to conclude the parts being ordered and replaced, did in fact fail.

b. The ORDA INCO schedule requires at least five installs per week. The ORDA program requests sites scheduled for ORDA provide their system performance survey approximately three weeks before the INCO. Many sites started tuning their system weeks before the system performance

survey was due. This may be a driving factor for many components appearing to fail during the same time frame.

c. We are learning more about ORDA performance as we gain more experience and systems are installed in more diverse geographical locations. The ORDA system represents a significant improvement to the overall NEXRAD system. Additional system improvements will be realized when Build 8 is loaded on the ORDA, starting on May 1, 2006. The ROC Data Quality team, comprised of members from the ROC, WDTB, NSSL, and the ORDA Team, will continue their weekly meetings in order to evaluate data quality from ORDA sites. The Hotline staff, ROC Engineering staff, and the ORDA contractor have begun weekly meetings in order to review ORDA-related Hotline Assistance Requests. These are all attempts to continue to improve ORDA performance. As always, sites are encouraged to contact the Hotline with problems or concerns.